

WHAT IS CLAIMED IS:

1. Apparatus for closing fasteners in media, the apparatus comprising:  
a plurality of fastener clinches, the plurality of fastener clinches being adapted for operable engagement with a plurality of fastener dispensers, the plurality of fastener clinches comprising structure adapted to generally simultaneously close a plurality of fasteners discharged by the fastener dispensers;  
an actuation mechanism for moving the fastener clinches to contact and close the fasteners in the media; and  
a drive for powering the actuation mechanism.
2. The apparatus of claim 1, wherein the actuation mechanism comprises:  
a plurality of cams; and  
a plurality of cam followers operably coupled with each cam.
3. The apparatus of claim 2, wherein each cam defines two cam surfaces, each cam surface being adapted to engage and move one of the cam followers operably coupled with the cam.
4. The apparatus of claim 3, wherein one of the cam followers for each cam is adapted to move a respective clinch toward a respective fastener; further wherein another of the cam followers for each cam is adapted to close the respective fastener in the media.
5. The apparatus of claim 1, wherein the drive comprises a single motor.
6. The apparatus of claim 5, in combination with a media transporter for moving media with respect to the fastener clinches, the media transporter being powered by the single motor.
7. The apparatus of claim 1, further comprising:  
a frame for supporting the plurality of fastener clinches; and

a compliant biasing device operably coupled with the frame and the plurality of fastener clinches, the compliant biasing device being adapted to bias the plurality of fastener clinches toward the fastener dispensers and to provide compliance between the plurality of fastener clinches and the frame.

8. The apparatus of claim 1, in combination with the plurality of fastener dispensers and with an ejector adapted to move fastened media from the apparatus.

9. A fastening device for media, comprising:  
a transporter for transporting media with respect to the fastening device;  
a fastener head for discharging a fastener into media transported by the transporter;  
a closing mechanism for closing the fastener; and  
a motor for actuating both the transporter and the closing mechanism.

10. The fastening device of claim 9, wherein:  
said fastener head is one of a plurality of fastener heads adapted to simultaneously discharge a plurality of fasteners into media transported by the transporter;  
said closing mechanism is one of a plurality of closing mechanisms adapted to simultaneously close the plurality of fasteners; and  
the plurality of closing mechanisms and the transporter are actuated by the motor.

11. The fastening device of claim 10, further comprising another motor for moving the plurality of fastener heads to desired locations with respect to the media.

12. The fastening device of claim 10, wherein the fastener heads are adapted for movement to an initialization position, a first fastener-discharge position, and a second fastener-discharge position; further wherein the closing mechanisms are

disposed to close fasteners discharged in both the first fastener-discharge position and the second fastener-discharge position.

13. The fastening device of claim 10, further comprising a support body for supporting the plurality of closing mechanisms, the support body being biased toward the plurality of fastener heads by a compliant biasing device to generally minimize jamming of the media.

14. The fastening device of claim 9, wherein the closing mechanism comprises structure adapted to operably engage the fastener head to discharge one or more fasteners.

15. The fastening device of claim 9, wherein the closing mechanism comprises:

two cam surfaces operably coupled with the motor; and

two cam followers operably coupled with the two cam surfaces, the two cam surfaces being adapted to drive the two cam followers upon movement of the two cam surfaces, one of the two cam followers being adapted to cause movement of the media toward the fastener head for discharge of a fastener and the other of the two cam followers being adapted to cause closing of the fastener.

16. The fastening device of claim 15, wherein the transporter comprises:

a transporter cam surface operably coupled with the motor; and

a transporter cam follower operably coupled with the transporter cam surface, the transporter cam surface being adapted to drive the transporter cam follower upon movement of the transporter cam surface, the transporter cam follower being adapted to cause movement of the media with respect to the fastener head.

17. The fastening device of claim 9, wherein the fastener head comprises a staple head for discharging a staple into the media; further wherein the closing mechanism comprises a staple clinch.

18. A saddle assembly for use in fastening sheets together, the saddle assembly comprising:
- means for applying force to release a staple from a staple dispenser;
  - means for clinching the staple into a closed position, the means for clinching first moving together with the means for applying to both position the sheets and to apply the force, the means for clinching subsequently moving relative to the means for applying to clinch the staple; and
  - means for actuating both the means for applying and the means for clinching.
19. The saddle assembly of claim 18, wherein the means for actuating comprises:
- a first cam surface and a first cam follower; and
  - a second cam surface and a second cam follower;
- wherein the means for actuating drives the first cam surface and the second cam surface.
20. The saddle assembly of claim 18, wherein the means for actuating comprises a single motor.
21. A method of fastening media, the method comprising:
- moving the media into contact with a fastener head;
  - discharging a fastener from the fastener head into the media;
  - clinching the fastener with a clinch to bind the media; and
  - moving a guide between the clinch and the fastener head, the guide being used to guide the media; and
  - using a single motor to accomplish at least the moving of the media, the clinching, and the moving of the guide.
22. The method of claim 21, wherein:

the discharging comprises generally simultaneously discharging a plurality of fasteners into the media using a plurality of fastener heads;

the clinching comprises generally simultaneously clinching the plurality of fasteners; and

the using comprises using the single motor to accomplish the simultaneous discharging and the simultaneous closing.

23. The method of claim 22, wherein the simultaneous discharging and the simultaneous closing form the media into a booklet.

24. The method of claim 22, further comprising:  
initializing the fastener heads at an initialization position; and  
moving the fastener heads from the initialization position to a position for simultaneously discharging the fasteners.

25. The method of claim 21, further comprising:  
biasing the media toward the fastener head to provide compliance and to generally minimize jamming of the media.

26. A method of closing a fastener, comprising:  
engaging ends of the fastener with a first closing member;  
bending the ends of the fastener with the first closing member;  
engaging the ends of the fastener with a second closing member, the second closing member being supported by the first closing member for movement therewith and being movable relative to the first closing member; and  
bending the ends of the fastener with the second closing member to close the fastener.

27. The method of claim 26, wherein the engaging with the first closing member comprises moving both the first closing member and the second closing member toward a fastener-dispensing location.

28. The method of claim 27, wherein the bending with the second closing member comprises moving the second closing member relative to the first closing member.
29. A stapling apparatus, comprising:  
a sheet-receiving saddle having a spine for receiving sheets to be stapled into a booklet;  
multiple stapler heads movable in a direction parallel to the spine of the sheet-receiving saddle; and  
a plurality of active clinches positioned along the spine of the sheet-receiving saddle;  
wherein the multiple stapler heads are moved to desired positions over the active clinches for generally simultaneously discharging staples into the sheets.
30. The stapling apparatus of claim 29, wherein the plurality of active clinches are operated by a common clinch motor; further wherein the common clinch motor is operated to cause discharging of the staples into the sheets.
31. The stapling apparatus of claim 29, further comprising a plurality of passive clinches positioned along the spine of the sheet-receiving saddle.